

## CLAIMS

1. A method of constructing a modular monolithic bulkhead panel comprising the steps of:

providing a composite panel

providing a first metal frame for holding said composite panel

providing a second metal frame for retaining said composite panel in first metal frame;

providing a gasket for sealing joint between composite panel and said first and second metal frames;

inserting said gasket into said first metal frame

inserting said composite panel into said gasket and first metal frame subassembly;

inserting said second metal frame into said subassembly; and

joining said first and second metal frame.

2. A modular monolithic bulkhead panel assembly comprising:

a composite panel

a first frame for holding a hybrid composite panel;

a second for retaining said hybrid composite panel in first metal frame; and

a gasket for sealing joint between hybrid composite panel and said first and second metal frames.

3. The panel assembly as in claim 2, wherein the first and second frames are metallic.

4. The panel assembly as in claim 2, wherein the first and second frames are composite.

5. The panel assembly as in claim 3, wherein the first and second metallic frames have a directed internal grain structure to enhance strength.

6. The panel assembly as in claim 3, wherein the first and second metallic frames have a uniform internal grain structure

7. The panel assembly as in claim 3, wherein the first and second metallic frames are formed by a machining process.

8. The panel assembly as in claim 3, wherein the first and second metallic frames are formed by casting.

9. The panel assembly as in claim 3, wherein the first and second metallic frames are formed by a drawn process.

10. The panel assembly as in claim 2, wherein the gasket is an elastomer.

11. The panel assembly as in claim 2, wherein the gasket is silicone

12. The panel assembly as in claim 2, wherein the gasket is silicone foam.

13. The panel assembly as in claim 2, wherein the gasket is an adhesive

14. The adhesive as in claim 13, wherein it is of the high temperature cure variety

15. The adhesive in claim 13, wherein it is of the cold temperature cure variety

16. The panel assembly as in claim 2, wherein the panel is of a thermosetting sandwich construction.

17. The thermosetting sandwich panel as in claim 14, wherein the plys comprise woven graphite fabric and high temperature phenolic resin.



18. The panel assembly as in claim 2, wherein the fastener is a rivet.
19. The panel assembly as in claim 2, wherein the fastener is a threaded fastener
20. The panel assembly as in claim 2, wherein the fastener is an adhesive.
21. The panel assembly as in claim 2, wherein the fastener is a weld.
22. A modular monolithic bulkhead panel assembly comprising in combination:  
a hybrid composite panel  
a two-piece H-channel retention and mounting frame for retaining said hybrid  
composite panel: and,  
sealing means between two-piece H-Channel retention and mounting frame and  
said hybrid composite panel.
23. The invention according to claim 22, wherein said sealing means comprises  
an elastomer sealing gasket.
24. An aircraft bulkhead structure, said aircraft bulkhead structure including a  
plurality of metal framed modular monolithic bulkhead panels; each of said plurality of  
metal framed modular monolithic bulkhead panels including a machined metal frame  
with nutplates, a machined metal internal ring with nutplates, a non-metallic hybrid  
composite panel sub assembly with potted inserts, adhesive backed silicone foam internal  
sealing means, and a frame sealing means common to said panel and structure interface.